

Listing of Claims:

1. (Currently amended) A method for isolating mesenchymal stem cells from bone marrow aspirate, comprising:

(a) providing a cell mixture comprising mesenchymal stem cells and other cells;

(b) seeding and culturing the cell mixture in a culture device comprising an upper plate with pores and a lower plate base, said upper plate, made of the mesenchymal stem cell adhering material and pores are about 0.4 to 40 microns in diameter, where mesenchymal stem cells adhere and are cultured, and the lower plate base, where the other small-sized hematopoietic and non-hematopoietic cells adhere following passing through the pores in the upper plate, said culturing with medium containing factors that stimulate mesenchymal stem cells growth without differentiation and allow for the selective adherence of only the mesenchymal stem cells to the upper plate surface; and

(c) removing non-adherent cells on the upper plate by changing medium.

(d) collecting mesenchymal stem cells from the upper plate.

2. (Canceled)

3. (Canceled)

4. (Previously presented) The method as claimed in claim 1, wherein the cell mixture comprises mammalian mesenchymal stem cells.

5. (Canceled)

6. (Previously presented) The method as claimed in claim 4, wherein the cell mixture comprises human mesenchymal stem cells.

7. (Canceled)

8. (Canceled)

9. (Previously presented) The method as claimed in claim 1, wherein the mesenchymal stem cells can differentiate into tissues comprising bone, adipose, or cartilage.

10. (Previously presented) The method as claimed in claim 1, wherein the

mesenchymal stem cells are characterized by CD34-.

11. (Previously presented) The method as claimed in claim 1, wherein the culture medium is 10% fetal bovine serum-supplemented Dulbecco's modified Eagle's medium containing 1 g/L of glucose.

12. (Withdrawn) An isolated mesenchymal stem cell recovered by the method as claimed in claim 1, which has the capability of self-renewal and pluripotent differentiation.

13. (Withdrawn) The mesenchymal stem cell as claimed in claim 12, which can differentiate into tissue comprising bone, adipose, or cartilage.

14. (Withdrawn) The mesenchymal stem cell as claimed in claim 12, which is characterized by CD34-.

15. (Withdrawn) A composition comprising the mesenchymal stem cell as claimed in claim 12 and a culture medium, wherein the medium expands the mesenchymal stem cell.

16. (Withdrawn) The composition as claimed in claim 15, wherein the mesenchymal stem cell is characterized by CD34-.

17. (Withdrawn) The composition as claimed in claim 15, wherein the medium comprises DMEM-LG medium containing 10% fetal bovine serum.

18. (Withdrawn) A pharmaceutical composition comprising the mesenchymal stem cell as claimed in claim 12 and a pharmaceutically acceptable carrier, wherein the mesenchymal stem cell is present in an amount sufficient to serve as tissue replacement or gene therapy for tissue damaged by age, trauma, and disease.

19. (Withdrawn) A pharmaceutical composition as claimed in claim 18, wherein the mesenchymal stem cell can differentiate into tissues comprising bone, adipose, or cartilage.

20. (Withdrawn) A composition comprising as claimed in claim 18, wherein the mesenchymal stem cell is characterized by CD34-.

21-22. (Canceled)

23. (Canceled)

24-31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Previously presented) The method as claimed in claim 1, wherein said the mesenchymal stem cell adhering material is plastic.

35. (Previously presented) The method as claimed in claim 1, wherein said the mesenchymal stem cells cultured until confluence.

36. (Previously presented) The method as claimed in claim 35, further comprising recovering the mesenchymal stem cells cultured until confluence for further re-plating to expand the mesenchymal stem cells.

37. (Previously presented) The method as claimed in claim 36, wherein said recovering the mesenchymal stem cells from the upper plate is by using trypsin-EDTA.

38. (Previously presented) The method as claimed in claim 36, further comprising re-plating the cells to expand the mesenchymal stem cells at a density of 4×10^3 - $10^4/\text{cm}^2$.

39. (Canceled)

40. (Canceled)

41. (New) The method as claimed in claim 1, wherein the pores are about 0.4 to 20 microns in diameter.